

REMARKS

INTRODUCTION:

In accordance with the foregoing, claim 1 has been amended, and claim 25 has been added. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1, 4-7, 9-10, 19-23 and 25 are pending and under consideration.
Reconsideration is respectfully requested.

REJECTION UNDER 35 U.S.C. §112:

In the Office Action, at page 2, numbered paragraph 2, claims 1, 4-7, 9-10 and 19-23 were rejected under 35 U.S.C. §112, first paragraph, for the reasons set forth therein. This rejection is traversed and reconsideration is requested.

The Examiner submits that the specification does not support exclusion of a fibrous surface. However, it is respectfully submitted that the court, in Ex Parte Williams and Neal, 39 USPQ 125 (1938) at pages 126-127, held that a negative expression in a chemical claim, while expressed in terms not found in the original disclosure is not objectionable as eliminating from scope certain materials which may possibly have been included in the original disclosure since the limitation has a narrowing effect rather than a broadening one. Thus, the court held that such a limitation was permissible.

It is respectfully submitted that the terminology "non-fibrous" is not new matter. The recitation of "a non-fibrous surface of a body" has a narrowing effect by narrowing the scope of the material of the surface of the body in the present application to "non-fibrous" material, as has been accepted by the courts as being permissible. Also, it is respectfully submitted that if fibrous material is included in the surface of the body, the fibrous material may be burned out after the thermal treating, and thus may not be suitable for the present invention.

Clearly, there are fibrous surfaces and non-fibrous surfaces. As admitted by the Examiner, examples of surfaces are provided that are indeed non-fibrous in nature (see, for example, Table 1, in which the coated body is copper or stainless steel). In claim 1, the terminology "non-fibrous" limits the surfaces to be utilized to "non-fibrous" surfaces. Since this limitation has a narrowing effect rather than a broadening one, it is respectfully submitted that claim 1 is in allowable form under 35 U.S.C. §112, first paragraph.

Since claims 4-7, 9-10 and 19-23 depend from amended claim 1, claims 4-7, 9-10 and 19-23 are submitted to be in allowable form under 35 U.S.C. §112, first paragraph for at least the reasons that amended claim 1 is submitted to be in allowable form under 35 U.S.C. §112, first

paragraph.

REJECTION UNDER 35 U.S.C. §103:

In the Office Action, at pages 3-5, numbered paragraph 4, claims 1, 4-7, 9 and 19-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Yamaguchi et al. (USPN 5,753,322; hereafter, Yamaguchi). This rejection is traversed and reconsideration is requested.

It is respectfully submitted that the claimed invention uses volatile solution, and thus no film remains after the thermal treating. In paragraph [0010] of the present invention, it states that the formed body may be discolored due to the metal compounds incorporated into the resin. Accordingly, an external appearance of the body becomes inferior, and the value thereof as a commercial product is decreased.

On the other hand, Yamaguchi uses acrylic resin, polyester resin, polyurethane resin, and fluorocarbon resin as coating material, thus forming on the building material a coating film having a thickness of several micrometers.

However, the Examiner appears to insist that Example 3 of Yamaguchi illustrates that the electroplating coating is a volatile solution, and Applicants cannot find such a description at all. Although water is used in Yamaguchi, Yamaguchi uses water for diluting the resultant, and thus the diluted acrylic resin is still non-volatile.

Moreover, there is a definite indication that a film 10 μm in thickness is prepared in Example 3 of Yamaguchi, col. 15, lines 52-60, set forth below for the Examiner's convenience (and confirmed in the drawings of Yamaguchi):

For comparison, to an Al plate having no anodic oxide film formed thereon, an acrylic coating material having a finely divided powder (average particle diameter: 20 nm) of TiO_2 a photocatalyst, incorporated therein in a proportion of 50% by weight was applied in an amount such as to form a film 10 μm in thickness by the electrodeposition coating process (Sample No. 4). (emphasis added)

Hence, it is clear that, in Yamaguchi, a film having a thickness of several micrometers remains, whereas, in contrast, in the present invention, no film remains after the thermal treating.

It is respectfully submitted that Yamaguchi recites an aluminum building material comprising a substrate made of aluminum or an aluminum alloy, an anodic oxide film having micropores formed on a surface of said substrate, and a film containing a photocatalytically active semiconductor and deposited on said anodic oxide film (see claim 1). Claim 6 of Yamaguchi further describes that said film containing said photocatalytically active semiconductor further contains an antibacterial metal, and claim 8 of Yamaguchi recites that the antibacterial metal is at least one metal selected from the group consisting of copper, silver, and

platinum. Hence, Yamaguchi requires the use of a photocatalytically active semiconductor in the film applied to the building material of aluminum that has an anodic oxide film thereon.

However, the present claimed invention does not recite the use of a photocatalytically active semiconductor in the coating applied to a body. Thus, for clarity, claim 1 has been amended to recite, in part: "coating a volatile photocatalytically active semiconductor-free solution dispersed with nano-sized metal particles onto the non-fibrous surface of the body."

It is respectfully submitted that the above-cited amendment, in accordance with Ex Parte Williams and Neal, 39 USPQ 125 (1938), is not objectionable since the limitation has a narrowing effect rather than a broadening one.

In addition, it should be noted that Yamaguchi recites the following deposition process in col. 16, lines 1-11:

The electrodeposition coating was performed by a procedure which comprised mixing the fine powder of TiO_2 and the coating material at a prescribed ratio, diluting the resultant mixture with water, immersing the anodized Al plate in the produced coating material, allowing the coating material and the Al plate to remain in intimate contact for one minute in the absence of flow of electric current, and continuing exertion of a voltage, DC 200 V, on the Al plate enveloped with the coating material until a film grew to a necessary thickness. The coated Al plate was washed twice with purified water and then baked at 190°C for 40 minutes. (emphasis added)

Thus, Yamaguchi recites utilizing a baking temperature that is greater than the heating temperature utilized by the present invention. In contrast, the present invention specifically recites that a temperature of $50\text{-}150^\circ\text{C}$ is utilized to prevent deformation of the body (see paragraph 15 of the specification of the present invention).

Thus, it is submitted that Yamaguchi does not recite or suggest coating a volatile photocatalytically active semiconductor-free solution dispersed with nano-sized metal particles onto the non-fibrous surface of the body as is recited by amended claim 1 of the present invention, and recites utilizing a higher temperature to heat the coated body than is used in the present invention. Hence, amended claim 1 is submitted to be patentable under 35 U.S.C. §103(a) over Yamaguchi et al. (USPN 5,753,322). Since claims 4-7 and 19-23 depend from amended claim 1, claims 4-7 and 19-23 are patentable under 35 U.S.C. §103(a) over Yamaguchi et al. (USPN 5,753,322) for at least the reasons that amended claim 1 is submitted to be patentable under 35 U.S.C. §103(a) over Yamaguchi et al. (USPN 5,753,322).

NEW CLAIM:

New claim 25 recites that the features of the present invention include A method of providing antibacterial activity to a non-fibrous surface of a filter using nano-sized metal particles, comprising: coating, onto the non-fibrous surface of the filter, a volatile photocatalytically active

semiconductor-free solution dispersed with nano-sized metal particles selected from the group consisting of silver (Ag), aluminum (Al), copper (Cu), iron (Fe), zinc (Zn), cadmium (Cd), palladium (Pd), rhodium (Rh) and chrome (Cr); and heating the filter at 50-150°C to obtain a deposit of nano-sized metal particles on the filter.

Nothing in the prior art teaches or suggests such. It is submitted that this new claim, distinguishes over the prior art.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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